UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/468,668	12/21/1999	JAMES A. KWEEDER	30-4874	3902

7590 12/17/2004

Margaret S. Millikin
HONEYWELL INTERNATIONAL INC
15801 WOODS EDGE ROAD
COLONIAL HEIGHTS, VA 23834

EXAMINER	
MADSEN, ROBERT A	

ART UNIT	PAPER NUMBER
1761	

DATE MAILED: 12/17/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/468,668	KWEEDER ET AL.	
	Examiner	Art Unit	
	Robert Madsen	1761	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *20 September 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-10 and 15-17* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-10,15-17* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on September 20, 2004 has been entered. Claims 1-10,15-17 remain pending in the application.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hoogendonk (US 3083406) in view of Holland et al. (1995) and Hanke et al (US 5466281) and Otsuka et al. (US 3539326).

4. Regarding claims 1, 2,6, Hoogendonk teaches the general method of prilling molten fertilizer (e.g. NPK fertilizers or ammonium nitrate mixed with limestone or dicalcium phosphate) by mechanically agitating the molten mixture in a prill head with

sweep agitators, which are conical rollers (See items 8 of Figure 1, Column 1, lines 9-21). While the prill head is rotating, Hoogendonk rotates the agitators, as recited in claim 6, in order overcome the thixotropic nature of the molten mixture and keep the mixture to fluid (i.e. the mixture is a melt slurry as recited in claim 2), and allow for continuous prilling(Column 1, line 54 to Column 2, line 15). Since Hoogendonk teaches the head rotates, the influence of a force would be centrifugal force. Hoogendonk do not explicitly teach how one arrives at the NPK or ammonium nitrate-containing melt, that is, providing a first molten component and mixing it with a second, and reacting the components as recited in claim 1, Additionally, although Hoogendonk the melt is thixotropic, Hoogendonk do not explicitly teach the mixture is a shear thinnable having a viscosity that decreases with shear rate as recited in claim 1

5. With respect to forming a mixture that is mixed with sufficient time to form a shear thinnable mixture , Holland et al. are relied on as evidence that thixotropic materials are shear thinning (i.e. page 55) and that shear-thinning materials have a decreasing viscosity with increasing shear rate (in Figure 1.19(b)), as recited in claim 1 (Pages 49, 52,53, and 55). Hank et al. are relied on as further evidence of the term thixotropic materials used to express shear thinning materials that have a decreasing viscosity with increasing shear rate(Column 3, lines 48-50). Thus by teaching a thixotropic material , Hoogendonk teaches therefore teach a shear thinning material that a decreasing viscosity with increasing shear rate, as evidenced by Holland et al. and Hank et al.

6. With respect to the method of making an NPK or ammonium nitrate-containing melt prior to the prilling step, Otsuka et al. also teach prilling molten mixture of fertilizers, such as NPK or ammonium nitrate-containing. Otsuka et al. teach the conventional fertilizer melt slurry (e.g. an NPK fertilizer) is made by the steps of providing a molten first component (e.g. ammonium nitrate), mixing at least a second component to with the first (e.g. phosphorous and/or potassium salts), reacting the components to form a mixture at a particular temperature and time (see especially Examples for time/temp combination, Column 1, lines 15-56, Column 7, line 19 to Column 8, line 34, Examples) , as recited in claim 1. Therefore, it would have been obvious to modify Hoogendonk and include the steps of providing a molten first component, mixing it with at least a second component, and reacting the two at a temperature and sufficient time to form a mixture, since Hoogendonk teaches prilling NPK, or ammonium nitrate containing, molten fertilizers and Otsuka et al. teach these the conventional steps in preparing NPK or ammonium nitrate fertilizer melt slurries for prilling.

7. Regarding claims 3, Hoogendonk is silent in teaching a first component is ammonium nitrate and a second component is ammonium sulfate. Otsuka et al. teaches such NPK fertilizers may comprise ammonium sulfate added to a melt solution of ammonium nitrate (Column 5, lines 43-53). Therefore it would have been obvious to include ammonium nitrate as a first component and ammonium sulfate as a second component since Otsuka et al. teach ammonium sulfate may also be added to the ammonium nitrate composition to form a molten fertilizer mixture, and one would have

been substituting one conventional NPK fertilizer preparation step for another for the same purpose: prilling molten fertilizer.

8. Regarding claims 4 and 5, Hoogendonk also silent in teaching a moisture level or micronutrients. However, Otsuka et al. are relied on as evidence of the conventionality of a ammonium nitrate molten mixture used for prilling comprising 1-2% moisture as recited in claims 4 and 9 (Column 5, lines 1-20) and micronutrients as recited in claims 5 and 10 (i.e. Introducing calcium and magnesium values in Column 5, lines 43-53). Therefore, it would have been obvious to include 1-2% moisture and micronutrients since Otsuka et al. teach these were conventional compositions for ammonium nitrate containing molten compositions used for forming granular fertilizer, and one would have been substituting one conventional fertilizer melt composition for another.

9. Claims 7-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hoogendonk (US 3083406) in view of Holland et al. (1995) and Hanke et al (US 5466281) and Otsuka et al. (US 3539326) as applied to claims 1-6 above, further in view of Frenken et al. (US 3988398)

10. Regarding claim 7, modified Hoogendonk is silent in teaches blades per se for the agitator. Frenken et al. teach a method to prill a melt slurries of ammonium nitrate mixtures, such as NPK Fertilizer , by mechanically agitating the material in a prill head wherein essentially the entire liquid volume of the prill head is swept by an adjustable speed agitator, such as a wiping blade (See prill head 2 with holes 3 and pump impeller

blades 5 in Figures 1 and 2, Abstract). Like Hoogendonk, Frenken et al. also teach flow in a prill head can be maintained by providing shear, and further by increasing shear as viscosity increases to maintain a constant flow of material out of the head (Column 1, lines 63 to Column line 14, Column 2, lines 15-45). Therefore it would have been obvious to modify the agitator of Hoogendonk and include the blades of Frenken et al. since Frenken et al. teach the blades will not only assure the material remains fluid, as sought by Hoogendonk, but allows one to maintain a constant flow out the prill head.

11. Regarding claims 8-10, these are the same limitations as recited in claims 3-5 and are rejected for the same reasons as stated above for claims 3-5.

12. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hoogendonk (US 3083406) in view of Holland et al. (1995) and Hanke et al (US 5466281) and Otsuka et al. (US 3539326) as applied to claims 1-6 above, further in view of Bassetti et al. (US 5378259).

13. Modified Hoogendonk is silent in teaching the reaction time for an ammonium nitrate/ammonium sulfate blend. Bassetti et al. also teach prilling ammonium nitrate mixtures. Bassetti et al. teach when 95% ammonium nitrate and 0.4% ammonium sulfate are reacted at 170°C-175°C the reaction time is 5-10 minutes (Example 1). Therefore it would have been obvious to have a reaction time between about 10 and 20 minutes, depending on the temperature and composition of the mixture since Bassetti et al. teach 95% ammonium nitrate and 0.4% ammonium sulfate are reacted at 170°C-175°C the reaction time is 5-10 minutes. To further select any other reaction time would

have been an obvious result effective variable of the molar ratio of ammonium nitrate to ammonium sulfate and the temperature selected since these variables are notoriously well known in the art to affect reaction time.

14. Claims 16 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hoogendonk (US 3083406) in view of Holland et al. (1995) and Hanke et al (US 5466281) and Otsuka et al. (US 3539326) as applied to claims 1-6 above, further in view of Stengel (US 3021207)

15. Hoogendonk is silent in teaching heating during a reaction to 180-200°C or equimolar amounts of both ammonium nitrate and ammonium sulfate.

16. Stengel also teaches mixed ammonium nitrate fertilizers and is relied as evidence of the conventionality of producing fertilizer particles comprising equimolar amounts of ammonium nitrate and ammonium sulfate (Column 1, lines 40-65) wherein the reaction temperature is preferably between 180-200°C (e.g. 188°C or 370°F) because the ammonium nitrate is more fluid, easier to handle, and easier to feed into the particle forming device (in the case of Stengel a cooling conveyor belt). Therefore, it would have been obvious to further modify Hoogendonk and include equimolar amounts of ammonium nitrate and ammonium sulfate since modified Hoogendonk teach ammonium nitrate/ammonium sulfate blends as prilled fertilizers and Stengel teaches equimolar amounts of ammonium nitrate and ammonium sulfate as a fertilizer blend composition that can be made into a flowable product for easier handling for

subsequent particulate forming steps. It would have also have been obvious to run the reaction at 180-200°C since ammonium nitrate is easier to handle at this temperature.

Response to Arguments

17. Applicant's arguments with respect to the rejections made under 35 USC 112 and objection made under 35 USC 132 in light of the Amended claim language have been fully considered and are persuasive. The objection to the specification under 35 U.S.C. 132 and the rejection of claims 1-10,15-17 made under 35 USC 112, first paragraph have been withdrawn.

18. Applicant argues that the Hoogendonk mixture, being thixotropic, does not have the characteristics of a shear thinning mixture having a viscosity whereby the viscosity decreases with increased shear rate. However, as cited in the rejections above, Holland et al. teach thixotropic materials are shear thinning on Page 55 and that shear thinning materials demonstrate the viscosity decreases with increased shear rate in Figure 1.19(b) on Page 49. In addition, Hank et al. teach in a issued patent that thixotropic materials are shear thinning and have a decreasing viscosity with increasing shear rate(Column 3, lines 48-50). Therefore, one of ordinary skill in the art would conclude that the thixotropic materials of Hoogendonk have a decreasing viscosity with increasing shear rate since thixotropic materials were described as having this characteristic.

Conclusion

19. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Robert Madsen whose telephone number is (571) 272-1402. The examiner can normally be reached on 7:00AM-3:30PM M-F.

20. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Milton Cano can be reached on (571) 272-1398. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

21. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Robert Madsen
Examiner
Art Unit 1761

MILTON I. CANO
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700